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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/594,692

05/31/2007

Xavier Briand

20010.0007USWO

9463

52835

7590

03/18/2009

HAMRE, SCHUMANN, MUELLER & LARSON, P.C.

P.O. BOX 2902

MINNEAPOLIS, MN 55402-0902

EXAMINER

FLOOD, MICHELE C

ART UNIT

PAPER NUMBER

1655

MAIL DATE

DELIVERY MODE

03/18/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/594,692 | Applicant(s) BRIAND ET AL. | |
| | Examiner Michele Flood | Art Unit 1655 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-8 and 11-17 is/are pending in the application.
- 4a) Of the above claim(s) 12-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-8 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Acknowledgment is made of the receipt and entry of the amendment filed on October 15, 2008 with the cancellation of Claims 1-5, 9 and 10 and the addition of newly added Claims 11-17.

Any objection or rejection not repeated herein is withdrawn.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Response to Arguments

Election/Restrictions

Newly submitted claims 12-17 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 12-17 are directed to a method of using an amount of (1) ulvans extracted from green algae of the genus *Ulva* or *Enteromorpha* or (s) a reaction product obtained from the treatment of green algae of the genus *Ulva* or *Enteromorpha* by hydrolysis or enzymatic hydrolysis, sufficient for protecting a plant comprising: determining an amount of extracted ulvans or the reaction product sufficient to stimulate expression of genes involved in plant protection; and preparing the extracted ulvans of the reaction product for delivering the extracted ulvans or the reaction product to the plant, whereas the originally claimed invention was directed to a method of activating plant defense and resistance reactions against biotic or abiotic stresses comprising administering to plants an effect of (a) ulvans, in particular extracted from green from green algae of the genus *Ulva* or

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Enteromorpha or ulvan-derived oligosaccharides. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits.

Accordingly, claims 12-17 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claims 6-8 and 11 are under examination.

Claim Rejections - 35 USC § 112

Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Newly applied as necessitated by amendment.

The metes and bounds of Claim 11 are rendered vague and indefinite by “wherein the nutritive solutions for the roots is hydroponics or dropwise” because it is unclear as to the subject to which Applicant seeks patent protection because “hydroponics” generally refers to a method of growing plants using mineral solutions without soil and “dropwise” would appear to be how the nutritive solutions is applied as opposed to a nutritive solution itself. However, it is unclear as to how “hydroponics” or “dropwise” pertains to “nutrition solutions for the roots”. The lack of clarity renders the claim ambiguous and unclear.

Claim Rejections - 35 USC § 102

Claims 6 and 8, as amended, remain rejected under 35 U.S.C. 102(b) as being anticipated by Nairn et al. (U. S. Patent No. 5,672,503) made evident by the teachings of Lahaye et al. (WW; Lahaye, M. et al. Carbohydrate Research, (1994), 262: 115-125. *Chemical characteristics of insoluble glucans from the cell wall of the marine green alga Ulva lactuca* (L.) Thuret.) and Bi et al. (UU; Bi, F. et al. Pak. J. Bot. (1999), 31(1): 193-198. *Studies on aqueous extracts of three green algae as an elicitor of plant defence mechanism.*). Applicant's arguments have been fully considered but they are found unpersuasive for the reason set forth in the previous Office action and for the reason set forth herein.

Applicant claims a method for activating plant defense and resistance reactions against biotic or abiotic stresses comprising administering to plants an effective amount of (1) ulvans, in particular extracted from green algae of the genus *Ulva* or *Enteromorpha*, or (2) a reaction product obtained from the treatment of green algae of the genus *Ulva* or *Enteromorpha* by hydrolysis or enzymatic hydrolysis. Applicant further claims the method as claimed in claim 6, wherein the application to the plant is carried out via leaves or via roots; wherein the effective amount given to the plants is from 0.1g to 100g per liter, and preferably of the order of 1gper liter, when applied in liquid form via the leaves, in nutritive solutions for the roots, or in solutions for seed or post-harvest treatment, or else from 10 to 1000 per hectare, and preferably of the order of 200g per hectare when applied in solid form, in pulverulent or granulated products.

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Applicant argues that the teachings of Nairn fail to teach the instantly claimed method because Nairn is directed to vitrification, a very special phenomenon which is only observed in tissue culture. Applicant further argues limitations not commensurate in scope to the limitations of the claimed invention: "On the other hand, claim 6 is directed to stresses that are present in the natural environment, as opposed to *in vitro* environments, during the growth of the plants. Nothing in the reference teaches or even suggests biotic stresses or inoculating the plant with a pathogen. In fact, the reference specifically indicates that the effect of vitrification is obtained by the addition of a chemical compound, as opposed to a pathogen." Applicant's arguments have been fully considered but they are neither persuasive nor commensurate in scope to the claimed invention because the instantly claimed method is drawn to a method for activating plant defense and resistance against not only biotic stresses but also abiotic stresses. Moreover, the claim as presently drafted does not preclude activating plant defense and resistance actions in the propagation of plants using a tissue culture medium. Thus, Nairn teaches the claimed invention because Nairn teaches a method for inhibiting vitrification (read herein as a biotic stress) in plants comprising administering an effective amount of a plant protection product, namely an ulvan derived from *Ulva lactuca*. Nairn teaches applying a liquid composition comprising the claim-designated amounts of ulvan in a tissue growth medium (read herein as a fertilizer) to shoots exerted an anti-vitrification effect. See Table 3, in Column 15. An ulvan used in the method taught by Nairn was prepared as described in Lahaye et al. See Column 12, lines 14-24. Accordingly, Nairn teaches a method for activating plant

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defense and resistance against biotic and abiotic stresses in plants comprising effective amounts of ulvan from *Ulva lactuca* by washing, milling, extraction, fractionation, concentration and enzymatic hydrolysis, as evidenced by the teachings of Lahaye on page 116-117, under "2. *Materials and methods*".

Bi teaches a method for activating plant defense and resistance against biotic or abiotic stresses comprising applying an effective amount of a powdered extract of *Ulva lactuca* in liquid form to chickpea cotyledons prepared by acid hydrolysis of the algae. The acid hydrolysis product was obtained by washing, milling, and sequential extraction in water, dilute sodium hydroxide and hydrochloric acid and ethanol precipitation and freeze-drying, as well as acid hydrolysis.

The references anticipate the claimed subject matter.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6-8, as amended, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bi et al. (UU; Bi, F. et al. Pak. J. Bot. (1999), 31(1): 193-198. *Studies on aqueous extracts of three green algae as an elicitor of plant defence mechanism.*). Newly applied as necessitated by amendment.

Applicant's claimed invention of Claims 6 and 8 was set forth above. Applicant further claims the method as claimed in claim 6, wherein the administering to the plants is carried out via leaves or via roots.

The teachings of Bi are set forth above. Bi teaches the instantly claimed method except for wherein administering to the plants is carried out via the leaves or the roots. However, it would have been obvious to one of ordinary skill in the art to administer the composition taught by Bi to either leaves or the roots of plants because at the time the

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invention was made it was well known in the art that germinated plant cotyledons generally become the embryonic first leaves of a seedling. At the time the invention was made, one of ordinary skill in the art would have been motivated and one would have had a reasonable expectation that administering an effective amount of the composition taught by Bi to plant leaves would be a success because it would be predictable that plant leaf tissue would behave similarly to the germinated cotyledon plant tissue when treated with the reaction product obtained from the treatment of green algae of the genus *Ulva* by hydrolysis shown by Bi to elicit an activation of plant defense and resistance reactions against biotic or abiotic stresses.

Accordingly, the claimed invention was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, especially in the absence of evidence to the contrary.

No claims are allowed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michele Flood whose telephone number is 571-272-0964. The examiner can normally be reached on 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terry McKelvey can be reached on 571-272-0775. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michele Flood
Primary Examiner
Art Unit 1655

MCF
March 16, 2009

/Michele Flood/
Primary Examiner, Art Unit 1655